

REMARKS

Favorable reconsideration of this application is requested in light of the following remarks and discussion.

Claims 1-10 and 12-18 are pending in the application.

In the outstanding Office Action, Claims 1-4, 6-7, 11-15, and 17-18 were rejected under 35 U.S.C. §103(a) as being unpatentable over Masuda et al (U.S. Pat. Appl. Publ. No.2001/0015175) in view of Herchen et al (US 6,264,852). Claim 5 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Masuda et al and Herchen et al in view of Ueda et al (JP 08107102). Claim 9 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Masuda et al and Herchen et al in view of Ookawa et al (Japanese Laid Open Patent Publication No. 20003-49070). Claims 10 and 16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Masuda et al and Herchen et al in view of Howald et al (U.S. Pat. No. 6,074,516).

Independent Claims 1, 2, and 6 presently define a vacuum vessel that houses an article to be plasma-treated in a plasma region and that includes a lower electrode that is provided inside the vacuum vessel and onto which is placed the article to be plasma-treated. An upper electrode main body is provided above the lower electrode to form the plasma region in the vacuum vessel. The upper electrode main body has formed therein an opening through which passes light for detecting an extent of progress of plasma treatment of the article to be treated in the plasma region. An upper electrode cover is joined to a lower surface of the upper electrode main body and faces the plasma region. The upper electrode cover has formed therein a hole at a location corresponding to the opening of the upper electrode main body.

In these claims, a transparent window member that is made of a transparent member which is a separate body to the upper electrode cover, has a shape insertable into the hole of the upper electrode cover, and is retainably and upwardly removably fitted in the hole of the

upper electrode cover. The transparent window member is disposed to face the plasma region and has a part through which the light for detecting an extent of progress of plasma treatment passes. The transparent window member has *no through hole* in the part through which light passes.

The Office Action on page 3 acknowledges that Masuda et al fail to teach a transparent window member having no through hole. The Office Action asserts that Herchen et al that teaches a transparent window member having no through hole and further asserts that it is conventionally known in the art that a transparent member without holes is an alternative and equivalent structure to a transparent window member with holes since both function the same to transmit light.

However, Masuda et al state at paragraph [0010]:

With reference to the microwave ECR system and inductively coupled plasma processing apparatus, authors of the present invention have described that wafer surface can be measured from a quartz-made transparent window above the wafer. However, reaction products are deposited on the quartz-made window surface as discharge is repeated, and transmittance is reduced. Conversely, surface is etched and is made rough, so stable measurement for a long time is difficult. For this reason, this system has failed to meet practical requirements.

This description in Masuda et al both 1) shows that the functions of a transparent member with holes and a transparent member without holes differ making these structures when used in a plasma processing apparatus *not* equivalent,¹ and 2) teaches away from attempting to use the structure of the transparent window member having no through hole as disclosed in Herchen et al.

The examiner's attention is invited to consider In re Gurley, 31 USPQ2d 1130 (Fed. Cir. 1994) which stated that:

¹ In other words, this description in Masuda et al. indicates that when the structure of the transparent window member having no through hole as disclosed in Herchen et al is applied to the apparatus disclosed in Masuda et al., the advantage of Masuda et al of achieving stable measurement for a long time can no longer be attained.

A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be *discouraged from following the path set out in the reference*, or *would be led in a direction divergent* from the path that was taken by the applicant. The degree of teaching away will of course depend on the particular facts; in general, a reference will teach away if it suggests that the line of development flowing from the reference's disclosure is *unlikely to be productive* of the result sought by the applicant. [Emphasis added.]

For the above reasons, one skilled in the art at the time of the present invention would not have been motivated to combine the transparent window member of Herchen et al having no through hole with the apparatus of Masuda et al as the teachings of Masuda et al discourage one and lead one in a direction divergent from using windows without holes and thereby teach away from the asserted combination. M.P.E.P. § 2145 indicates that it is improper to combine references where references teach away from their combination.

Hence, Applicant submits that Claims 1, 2 and 6 and their dependent claims patentably define over Masuda et al and Herchen et al.

More specific to selected ones of the dependent claims, Claim 9 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Masuda et al in view of Herchen et al and Ookawa et al. However, the deficiencies in combining Masuda et al and Herchen et al are not overcome by the teachings of Ookawa et al. Furthermore, although the Office Action asserts that the upper electrode cover window member 4C made of quartz disclosed in Ookawa et al renders Claim 9 obvious, the window member 4C disclosed in Ookawa et al is not disposed to face the plasma region as defined in Claim 6 from which Claim 9 depends. In addition, Ookawa et al include a description that teaches away from attempting to dispose the upper electrode cover window member 4C so as to face the plasma region. Specifically, Ookawa et al state at col. 6, lines 1-7, that:

That is, it is prevented effectively that the suspended particles or the reaction products are stuck to and/or deposited on the quartz glass member 4C. In order to prevent the sticking and the deposition of the suspended particles

or the reaction products onto the quartz glass member 4C, it is preferable that the aspect ratio of the optical path is set not less than 7.

This description in Ookawa et al discourages one of ordinary skill in the art to dispose the plasma window to face the plasma region, as defined in Claims 6 and 9.

Thus, besides the dependence of Claim 9 on allowable independent Claim 6, dependent Claim 9 is believed to patentably define over Masuda et al, Herchen et al, and Ookawa et al.

Regarding Claims 10 and 16, Claims 10 and 16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Masuda et al in view of Herchen et al and Howald et al. However, the deficiencies in combining Masuda et al and Herchen et al are not overcome by the teachings of Howald et al.

Howald et al include a description that plug portion 302, which forms the observation window, may be formed of sapphire. However, Howald et al merely disclose a dielectric window (high sputter, etch resistant window) 300 including the plug portion 302 formed from a material having a higher dielectric constant and higher etch resistance than the surrounding material of the remainder of the dielectric window.

The dielectric window disclosed in Howald et al is provided with neither an upper electrode main body nor an upper electrode cover, unlike Masuda et al. Furthermore, the description at paragraph [0010] in Masuda et al (reproduced above) teaches away from attempting to use the structure of the plug 302 made of sapphire, as disclosed in Howald et al. In other words, the aforesaid description in Masuda et al indicates that, if the structure of the window made of sapphire (as disclosed in Howald et al) was applied to the apparatus disclosed in Masuda et al, the advantage of Masuda et al of achieving stable measurement for a long time would not be attained because, according to Masuda et al, the sapphire window would become contaminated.

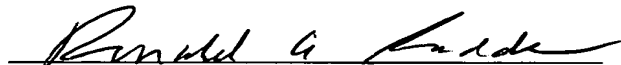
For these reasons, one of ordinary skill in the art at the time of the present invention would not have been motivated to combine Masuda et al, Herchen et al, and Howald et al, as asserted in the Office Action.

Thus, besides their dependence on allowable independent claims, dependent Claims 10 and 16 are believed to patentably define over Masuda et al, Herchen et al, and Howald et al.

Consequently, for the reasons discussed in detail above, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal allowance. Therefore, a Notice of Allowance is earnestly solicited.

Respectfully submitted,

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